REMARKS

Applicants appreciate the Examiner's thorough review of the present application, and respectfully request reconsideration in light of the preceding amendments and the following remarks.

Claims 4-7, 11-17 and 19-21 are pending in the application.

Claim 4 has been amended to emphasize the feature that each of the die pad and the connection pads has a first portion embedded in the package body and a second portion located outside the package body, and both the first and second portions have concave profiles. This feature is found in claim 18. Thus, claim 18 is cancelled to avoid duplication.

Likewise, claim 11 has been amended to emphasize the feature that each of the connection pads has a first portion embedded in the package body and a second portion located outside the package body, and both the first and second portions have concave profiles. This feature is found in claim 22. Thus, claim 22 is cancelled to avoid duplication.

A new, more descriptive title has been provided per the Examiner's request. The specification has been revised in the manner kindly suggested by the Examiner in the Office Action.

No new matter has been introduced through the foregoing amendments.

Rejection of claims 4-7 and 11-22 under 35 USC § 103(a) as being unpatentable over Jung et al. (US 6,342,730B1) in view of Kweon et al. (US 5,900,676)

Jung cannot be relied upon in a *35 U.S.C. 103(a)* rejection in light of the following facts:

1. Jung qualifies as prior art only under *35 U.S.C. 102(e)*; and

2. The instant application was filed after November 29, 1999, the effective date of amended *35 U.S.C. 103(c)*; and

3. The instant application and Jung were, at the time the instant invention was made, were subject to an obligation of assignment to the same company, i.e., Advanced Semiconductor Engineering, Inc., as evident from the attached Statement of Common Ownership.

35 U.S.C. 103(c) then applies to disqualify Jung as prior art usable in an obviousness rejection under *35 U.S.C. 103(a)*. It should be noted that the attached Statement of Common Ownership alone is sufficient evidence to establish common ownership at the time the instant invention was made. *See* MPEP 706.02(l)(2).

Accordingly, Applicants respectfully request that the *35 U.S.C. 103(a)* rejection relying on Jung be withdrawn.

Allowance of claims 5 and 12 in the absence of other relevant art is believed appropriate and courteously solicited.

Rejections of claims 4, 6-7, 11 and 13-22 under 35 USC § 103(a) as being unpatentable over Ooyama et al. (US 6,191,484B1) or Minamio et al. (US 6,338,984B2)

The present invention is directed to low-pin-count chip packages comprising a semiconductor chip and a plurality of connection pads electrically coupled to the chip. A package body is formed over the semiconductor chip and the connection pads using plastic molding methods such as transfer molding.

Amended independent claims 4 and 11 specifically require that each of the connection pads have a first portion embedded in the package body and a second portion located outside the package body, and that both the first and second portions have concave profiles. Thus, the "locking" of the connection pads in the package body is enhanced. The above feature and advantage are neither disclosed, taught, nor suggested by the applied references.

It is acknowledged that Ooyama et al. disclose, specifically in Fig. 2H, package body 1 formed over a semiconductor chip and connection pads 6 in a manner that a portion of die pad 8 and each connection pad 6 extends outward from the bottom of the package body. However, the Examiner did not exactly specify where the above feature, which is originally found in claims 18 and 22, and now in amended claims 4 and 11, may be found in the Ooyama reference. Applicant also has carefully reviewed the applied reference and still failed to locate any teaching of or suggestion for connection pads each having a first portion embedded in the package body and a second portion located outside the package body with both the first and second portions having concave profiles, as presently claimed. On the contrary, connection pads 6 taught by Ooyama et

al. are formed ***completely outside*** package body 1. Thus, Ooyama et al. fail to render obvious previously presented claims 18 and 22, and now amended claims 4 and 11.

It is also acknowledged that Minamio et al. disclose, specifically in Fig. 16, package body 6 formed over a semiconductor chip and connection pads 9 in a manner that a portion of die pad 2 and each connection pad 9 extends outward from the bottom of the package body. However, the Examiner did not exactly specify where the above feature, which is originally found in claims 18 and 22, and now in amended claims 4 and 11, may be found in the Minamio reference. Applicant also has carefully reviewed the applied reference and still failed to locate any teaching of or suggestion for connection pads each having a first portion embedded in the package body and a second portion located outside the package body with **both the first and second portions having concave profiles**, as presently claimed. Thus, Minamio et al. fail to render obvious previously presented claims 18 and 22, and now amended claims 4 and 11.

Thus, applicants respectfully submit amended independent claims 4 and 11 are patentable over the applied references, and request that the *35 U.S.C. 103(a)* rejections as to these claims be withdrawn. For at least the reason advanced above with respect to independent claims 4 and 11, reconsideration and withdrawal of the *35 U.S.C. 103(a)* rejections of claims 6-7, 13-17, and 19-21 are respectfully requested.

More particularly, claims 7 and 14 are patentable over the applied references not only for the reason stated above, but also on their own merits since claims 7 and 14 recite a novel feature of the invention that is neither disclosed, taught nor suggested by the applied reference. Namely, claims 7 and 14 require that areas on the surfaces of each connection pad without protection of the package body have a third metal coating formed thereon **thereby avoiding corrosion and contamination** (see also page 6, lines 28-31 of the specification and Fig. 16). The above feature and advantage are neither disclosed, taught, nor suggested by the applied references, i.e., Ooyama et al. and Minamio et al..

Each of the Examiner's rejections has been traversed/overcome. Accordingly, Applicants respectfully submit that all claims are now in condition for allowance. Early and favorable indication of allowance is courteously solicited.

The Examiner is invited to telephone the undersigned, Applicant's attorney of record, to facilitate advancement of the present application.

Respectfully submitted,

LOWE HAUPTMAN GILMAN & BERNER, LLP

Benjamin J. Hauptman
Registration No. 29,310

USPTO Customer No. 22429
1700 Diagonal Road, Suite 300
Alexandria, VA 22314
(703) 684-1111
(703) 518-5499 Facsimile
Date: March 17, 2003
BJH/lcw

MARKED-UP VERSION SHOWING CHANGES MADE

IN THE SPECIFICATION:

Please replace the paragraph beginning on page 7, line 10 with the following:

Referring to Fig. 7, a photoresist layer 350 is formed on a copper foil 235 by conventional techniques such as printing. Then, the photoresist layer 250 [235] is photochemically defined through a photomask (not shown) and developed to expose predetermined portions of the copper foil 235. The photoresist layer 250 is mainly composed of a resin mixture and a photoactive material that makes the photoresist layer 280 photodefinable. Preferably, the copper foil 235 has a thickness of about 4-20 mils.

IN THE CLAIMS:

Please cancel claims 18 and 22 without prejudice or disclaimer.

Please amend claims 4 and 11 as follows:

4. (Amended) A low-pin-count chip package comprising:

a die pad and a plurality of connection pads arranged at the periphery of the die pad wherein the die pad and the connection pads have a concave profile;

a first metal coating on the upper surface of the die pad and the connection pads;

a semiconductor chip disposed on the die pad and electrically coupled to the connection pads;

a package body formed over the semiconductor chip and the connection pads in a manner that a portion of the die pad and a portion of each connection pad extend outward from the bottom of the package body; and

a second metal coating on the lower surface of the die pad and the connection pads,

wherein each of the die pad and the connection pads has a first portion embedded in the package body and a second portion located outside the package body, both the first and second portions have concave profiles.

11. (Amended) A low-pin-count chip package comprising:

a semiconductor chip;

a plurality of connection pads arranged at the periphery of the semiconductor chip wherein the connection pads have a concave profile;

a first metal coating on the upper surface of the connection pads;

the semiconductor chip having a plurality of bonding pads electrically coupled to the connection pads;

a package body formed over the semiconductor chip and the connection pads in a manner that a portion of each connection pad extends outward from the bottom of the package body; and

a second metal coating on the lower surface of the connection pads,

wherein each of the connection pads has a first portion embedded in the package body and a second portion located outside the package body, both the first and second portions have concave profiles.